



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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3745

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Christopher M. Verdier

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Angela R. Gamble, Asst. to George W. Moxon II

TRANSMITTAL SHEET

Enclosed are the following documents:

Amended Claims

Response to Office Action

Corrected Drawings

Copy of Office Action Dated September 9, 2005

Return Receipt Postcard

AUTHORIZATION TO CHARGE DEPOSIT ACCOUNT

The Director is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment to Deposit Account No. 50-0959 (067920.1278).

Respectfully submitted

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December 9, 2005



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,460	09/26/2003	Mark Simakaski	067920-1278	3432
39905	7590	09/09/2005		
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EXAMINER VERDIER, CHRISTOPHER M				
ART UNIT		PAPER NUMBER		
3745				

DATE MAILED: 09/09/2005

Response Due 12/9/05

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,460

Applicant(s)

SIMAKASKI ET AL.

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 46-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-45, 50 and 51 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-45 and 50-51, drawn to a pump and a method of operating a pump, classified in class 415, subclasses 121.1 and 1.
- II. Claims 46-49, drawn to a method for converting a recessed impeller pump into a chopping pump, classified in class 29, subclass 889.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as by manufacturing the pump with an existing stock impeller having a concavity.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with George Moxon, Attorney of Record, on August 12, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-45 and 50-51. Affirmation of this election must be made by applicant in replying to this Office action. Claims 46-49 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "48", "72", "143", and "144". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 2, "Pentair, Inc." is superfluous and should be deleted.

On page 1, line 3, "TITLE OF THE INVENTION" is superfluous and should be deleted.

On page 7, line 8, -- by -- should be inserted after "chopped".

On page 7, line 20, "37" should be changed to -- 35 --.

On page 7, line 25, "37" should be changed to -- 35 --.

Claim Objections

Claims 14, 21, 38, and 45 are objected to because of the following informalities: Appropriate correction is required.

In claim 14, last line, "cutting" should be changed to -- cutter --.

In claim 21, last line, "cutting" should be changed to -- cutter --.

In claim 38, last line, "cutting" should be changed to -- cutter --.

In claim 45, last line, "cutting" should be changed to -- cutter --.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 9, 19, 29-30, 36, and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 6, line 2, "cutting blade" is inaccurate and should be changed to -- cutter bar --, because rotation of the impeller adjacent to its own cutting blade does not impart the shearing force, as is claimed. In claim 9, line 2, claim 19, line 2, claim 36, line 2, and claim 43, line 2, "cutting blade" is inaccurate and should be changed to -- cutter bar --, for the same reason. In claim 29, line 2, "cutter blade" is inaccurate and should be changed to -- cutter bar --.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 9-10, 13-16, 19, 21-23, 26-27, 29-30, 31-33, 36, 38-40, 43, 45, and 50 (as far as claims 6, 9, 19, 29-30, 36, and 43 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Tsukube 4,076,179 (figures 6-8). Note the impeller

assembly 1 to be installed in a pump having a pump housing 2 for enclosing a pumping chamber 19, an inlet flange near 17 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 13 that is to be operatively coupled to a pump driving device (14', see figure 1), the impeller assembly comprising a cutter bar 30/33 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 1 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar, wherein the impeller comprises a concavity near 9 shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (see figure 3, noting vortex A). The blades 10 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and chopping blade 10 having a curved member normal to the plane, with the curved member being shaped to create a vortex when rotated and comprises an edge/distal edge to be rotated about the central axis adjacent to the cutter bar. The cutter bar is adjustably coupled to the pump housing between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via bolts 34. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port and outlet port both function as inspection ports, which permit observation of the clearance between

the impeller and the cutter bar, via manual inspection or a borescope. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and a chopping blade 10 having a curved member normal to the plane, wherein the curved member is shaped to create a vortex A when rotated and comprises an edge to be rotated about the central axis adjacent to the cutter bar. Plural fasteners 34 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange. The inspection port is provided to the inlet flange. Also disclosed is a method for operating the pump, the method comprising receiving the fluid through the inlet flange, rotating the impeller adjacent to the cutter bar to chop objects entrained in the fluid, and directing at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar.

Claims 15-16, 19-20, 31, 33, 36-37, 39-40, and 43-44 (as far as claims 19, 36, and 43 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Girardier 3,692,422. Note the impeller assembly 8/9 to be installed in a pump having a pump housing 2 for enclosing an unnumbered pumping chamber, an inlet flange near 1 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange near 5, 7 through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 15 that is to be operatively coupled to a pump driving device, the impeller assembly comprising a cutter bar 28 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 9 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter

bar. The blades 27 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The cutting bar is adjustably coupled to the pump housing between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via screw 31 and nut 32. The clearance is adjustable externally of the pump housing. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port 4 and outlet port 5 both function as inspection ports, which permit observation of the clearance between the impeller and the cutter bar, via manual inspection or a borescope. Plural fasteners 31, 32 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange. The inspection port is provided to the inlet flange.

Claims 15-16 and 19-20 (as far as claim 19 is definite and understood) are also rejected under 35 U.S.C. 102(b) as being anticipated by Soviet Union Patent 1,488,594. Note the impeller assembly to be installed in a pump having a pump housing 1 for enclosing a pumping chamber, an unnumbered inlet flange through which a fluid is to be introduced into the pumping chamber at a first pressure, and a rotatable shaft 3 that is to be operatively coupled to a pump driving device, the impeller assembly comprising a cutter bar 11 to be adjustably coupled to the pump housing adjacent to the inlet flange, and an impeller 4 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar, wherein a position of the cutter bar is adjustable relative to the

impeller to provide adjustment of the clearance between the cutter bar and the impeller, via bolts 12, 13. The blades of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The clearance is adjustable externally of the pump housing via bolts 12, 13. The recitation in claim 15, lines 3-4 of an outlet flange through which the fluid is to be discharged from the pumping chamber at a second pressure has not been given patentable weight because it occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-5 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukube 4,076,179 in view of Nilsson 3,295,769. Tsukube discloses an impeller assembly substantially as claimed as set forth above, including a chopping blade 10, but does not disclose that the chopping blade comprises a serrated portion that passes adjacent to the cutter bar 30/33 during impeller rotation, with the serrated portion comprising plural teeth.

Nilsson (figures 3 and 5) shows a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion comprising plural teeth, for the purpose of aiding in chopping fibrous material.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the impeller assembly of Tsukube such that the chopping blade comprises a serrated portion comprising plural teeth, as taught by Nilsson, for the purpose of aiding in chopping fibrous material.

Claims 17-18, 34-35, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over either (Tsukube 4,076,179 or Girardier 3,692,422) in view of Nilsson 3,295,769. Tsukube and Girardier disclose impeller assemblies substantially as claimed as set forth above, including respective chopping blades 10, 27, but do not disclose that the chopping blade comprises a serrated portion that passes adjacent to the respective cutter bar 30/33, 28 during impeller rotation, with the serrated portion comprising plural teeth.

Nilsson (figures 3 and 5) shows a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion comprising plural teeth, for the purpose of aiding in chopping fibrous material.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the impeller assembly of either Tsukube or Girardier such that the chopping blade comprises a serrated portion comprising plural teeth, as taught by Nilsson, for the purpose of aiding in chopping fibrous material.

Claims 1-3, 6-13, 22-23, 26-30, and 50-51 (as far as claims 6, 9, and 29-30 are definite and understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Girardier 3,692,422 in view of Tsukube 4,076,179. Girardier discloses an impeller assembly substantially as claimed, including impeller assembly 8/9 to be installed in a pump having a pump housing 2 for enclosing an unnumbered pumping chamber, an inlet flange near 1 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange near 5,

7 through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 15 that is to be operatively coupled to a pump driving device, the impeller assembly comprising a cutter bar 28 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 9 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar. The blades 27 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and a curved member 27 normal to the plane that functions as a chopping blade, with an edge to be rotated about the central axis adjacent to the cutter bar. The cutter bar is adjustably coupled to the pump housing between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via screw 31 and nut 32. The clearance is adjustable externally of the pump housing, without disassembling the pump housing. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port 4 and outlet port 5 both function as inspection ports, which permit observation of the clearance between the impeller and the cutter bar, via manual inspection or a borescope. Plural fasteners 31, 32 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange. The inspection port is provided to the inlet flange. Girardier also discloses a method for operating the pump, the method comprising receiving the fluid through the inlet flange, and

rotating the impeller adjacent to the cutter bar to chop objects entrained in the fluid. The clearance may be observed through the inspection port 4.

However, Girardier does not disclose that the impeller comprises a concavity shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (claims 1 and 22), does not disclose that the curved member is shaped to create a vortex when rotated (claim 14), does not disclose directing at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (claim 50), and does not disclose observing the clearance between the cutter bar through the inspection port and adjusting a position of the cutter bar to create a suitably sized clearance (claim 51).

Tsukube (figures 6-8) shows a pump having a cutter bar 30/33, and an impeller 1 for imparting a centrifugal force on fluid entering a pumping chamber, with a clearance formed between the impeller and the cutter bar, wherein the impeller comprises a concavity near 9 shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (see figure 3, noting vortex A), with the impeller having a curved member 10 that is shaped to create the vortex when rotated, for the purpose of improving pumping head and avoiding pump clogging due to fibrous solid matter.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the pump of Girardier such that it includes a concavity shaped to

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direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar, with the curved member being shaped to create a vortex when rotated, and such that at least a portion of the fluid entering the pumping chamber is directed generally toward the clearance between the impeller and the cutter bar, as taught by Tsukube, for the purpose of improving pumping head and avoiding pump clogging due to fibrous solid matter.

Concerning the recitation in claim 51 of observing the clearance between the cutter bar through the inspection port and adjusting a position of the cutter bar to create a suitably sized clearance, it would have been obvious to a person having ordinary skill in the art to perform this, because the clearance is viewed directly through the inlet/inspection port 4, and one of ordinary skill in the art would have known that when the cutter blade 28 contacts the impeller blades 27, the clearance must be increased, because one of ordinary skill in the art would not operate the pump with cutter blade 28 contacting the impeller blades 27.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Klosson is cited to show a pump with a cutter bar and an inspection port. Klosson could also have been applied as it anticipates at least claim 39, but is not applied at this time to avoid multiple rejections.

Japanese Patent 55-117,094 is cited to show a pump with a cutter bar and a concave impeller that creates a vortex to direct fluid towards the cutter bar.

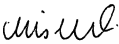
Hayward, Hartman, and Japanese Patent 3-271,598 are cited to show cutter pumps with inspection ports.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
August 30, 2005


Christopher Verdier
Primary Examiner
Art Unit 3745

Notice of References Cited

Application/Control No.

10/672,460

Applicant(s)/Patent Under
Reexamination
SIMAKASKI ET AL.

Examiner

Christopher Verdier

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U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-4,076,179 A	02-1978	Tsukube	241/185.6
	B	US-3,692,422 A	09-1972	Girardier	415/121.1
	C	US-3,295,769 A	01-1967	Nilsson	241/46.11
	D	US-2,265,758 A	12-1941	KLOSSON	415/121.1
	E	US-6,190,121 B1	02-2001	Hayward et al.	415/121.1
	F	US-2,245,035 A	06-1941	HARTMAN	415/121.1
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	JP-3,271,598-A	12-1991	Japan		415/121.1
	O	JP-55-117,094-A	09-1980	Japan		415.121.1
	P	SU-1,488,594-A	06-1989	Soviet Union		415/121.1
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.